INVITATION FOR BIDS (IFB) NO. 05-027

TO

FURNISH, DELIVER, INSTALL, AND MAINTAIN

TIER-2 DISK STORAGE INFRASTRUCTURE

FOR

INFORMATION TECHNOLOGY SERVICES

UNIVERSITY OF HAWAII

HONOLULU, HAWAII

OCTOBER, 2004

BOARD OF REGENTS

UNIVERSITY OF HAWAII

HONOLULU, HAWAII

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IFB No. 05-027 to Furnish, Deliver, Install, and Maintain Tier-2 Disk Storage Infrastructure for Information Technology Services, University of Hawaii, Honolulu, Hawaii

IT IS THE RESPONSIBILITY OF ALL BIDDERS TO CHECK THE TABLE OF CONTENTS TO CONFIRM THAT ALL PAGES LISTED THEREIN ARE CONTAINED IN THEIR BID PACKAGE.

BIDDER'S REMINDER:

Tax Clearance Certificate or OPRPM Form 128, CERTIFICATION FOR TAX CLEARANCE, (see SPECIAL PROVISIONS).

NOTICE TO BIDDERS

(Section 304-4, HRS)

BID FORMS for IFB No. 05-027, Tier-2 Disk Storage Infrastructure, will be available from and received in the OFFICE OF PROCUREMENT AND REAL PROPERTY MANAGEMENT, UNIVERSITY OF HAWAII, 1400 LOWER CAMPUS ROAD, ROOM 15, HONOLULU, HAWAII 96822, (an unofficial copy of the IFB is available on the Internet at http://www2.state.hi.us/bidapps/showbids.cfm) and must be submitted no later than 2:30 p.m., October 25, 2004, and at that time will be publicly opened.

Bids received after the time and date fixed for opening will not be considered.

Vendors located outside the Island of Oahu, Hawaii, USA, may request an official copy of the IFB to be sent via U.S. Postal Service by providing the vendor's name, address, contact person and telephone number. If express shipment is desired, requests must be submitted in writing with an account number, BILLABLE TO THE RECEIVER, and an authorized signature. Requests may be transmitted via facsimile, (808) 956-2093. Direct all questions to Karlee Hisashima, (808) 956-8674.

David McClain
Acting President, University of Hawaii

Advertised: Honolulu Star-Bulletin
Issue of: October 15, 2004

OPRPM FORM 115

BUSINESS CLASSIFICATION CERTIFICATION STATEMENT

(See Official Document)

BID FORM

TO

FURNISH, DELIVER, INSTALL, AND MAINTAIN

TIER-2 DISK STORAGE INFRASTRUCTURE

Office of Procurement and
Real Property Management
University of Hawaii
1400 Lower Campus Road, Room 15
Honolulu, Hawaii 96822

To Whom It May Concern:

The undersigned has carefully examined the INVITATION FOR BIDS (IFB) NO. 05-027, TO FURNISH, DELIVER, INSTALL, AND MAINTAIN TIER-2 DISK STORAGE INFRASTRUCTURE FOR INFORMATION TECHNOLOGY SERVICES, UNIVERSITY OF HAWAII, HONOLULU, HAWAII, and offers to furnish, deliver, install, and maintain the equipment as per TECHNICAL SPECIFICATIONS, in strict accordance with the true intent and meaning of the Invitation for Bids (IFB) and shall complete delivery and installation within SEVENTEEN (17) consecutive calendar days from the date designated in the Notice to Proceed, as follows:

BASIC BID

CONFIGURATION 1: 2 TB of FC DRIVES, AS PER TECHNICAL SPECIFICATIONS:

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of Hardware and Software support and maintenance.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 1:	**$_____**

CONFIGURATION 2: 2 TB OF FC DRIVES AND 2 TB OF FATA OR SATA DRIVES

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of hardware maintenance and software support.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 2:	**$_____**

CONFIGURATION 3: 2 TB OF FC DRIVES AND 4 TB OF FATA OR SATA DRIVES

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of hardware maintenance and software support.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 3:	**$**_____

CONFIGURATION 4: 2 TB OF FC DRIVES AND 6 TB OF FATA OR SATA DRIVES

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of hardware maintenance and software support.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 4:	**$**_____

CONFIGURATION 5: 2 TB OF FC DRIVES AND 8 TB OF FATA OR SATA DRIVES

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of hardware maintenance and software support.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 5:	**$_____**

CONFIGURATION 6: 2 TB OF FC DRIVES AND 10 TB OF FATA OR SATA DRIVES

Item	Description	Total Amount
a.	Furnish, Deliver, Install, and Maintain, a Tier-2 Storage Array as per Technical Specifications, including first-year maintenance, installation, professional support, training, and first year of hardware maintenance and software support.	$_____
b.	Year 2 Annual Hardware Maintenance and Software Support.	$_____
c.	Year 3 Annual Hardware Maintenance and Software Support.	$_____
d.	Year 4 Annual Hardware Maintenance and Software Support.	$_____
e.	Year 5 Annual Hardware Maintenance and Software Support.	$_____
	Total Aggregate Bid for Configuration 6:	**$_____**

Bidders shall itemize and include any associated costs, including but not limited to hardware maintenance costs, for existing UH hardware that is redeployed with the new Mainframe Server.

Annual hardware maintenance and software support costs shall be spread out over five years. For years two through five, bidders shall include any increases to the hardware maintenance and software support costs.

All bid prices shall be f.o.b. destination, including all trade-in credits, and all applicable taxes.

BASIS FOR AWARD

It is understood that award of contract is contingent upon the amount of funds available by the University. The award of contract, if awarded, will be made to the lowest responsive and responsible bidder for one of the follow configurations:

Configurations

All quantities represent raw capacity not including global hot spares:

1. 2 TB of FC drives
2. 2 TB of FC drives and 2 TB of FATA or SATA drives
3. 2 TB of FC drives and 4 TB of FATA or SATA drives
4. 2 TB of FC drives and 6 TB of FATA or SATA drives
5. 2 TB of FC drives and 8 TB of FATA or SATA drives
6. 2 TB of FC drives and 10 TB of FATA or SATA drives

For example, if it is determined that the University has sufficient funds available for Configuration No. 6, award will be made to the lowest responsive and responsible bidder for Configuration No. 6.

TAX LIABILITY

Both out-of-state and Hawaii bidders are advised that the amount bid on this solicitation is subject to the general excise tax (currently 4%) imposed by Chapter 237, Hawaii Revised Statutes (HRS) and, if tangible property is being imported into the State of Hawaii for resale, the use tax (currently 1/2%) imposed by Chapter 238, HRS. (Refer to Tax Clearance in the Special Provisions and Taxes in the General Provisions.) Bidders are therefore cautioned to consider such taxes in formulating their bids since no adjustments to the prices bid shall be allowed.

NOTE TO BIDDERS

An acceptable bid must conform in all material respects to this Invitation for Bids. Any of the following may be grounds for disqualification:

1. Taking exception to any of the specifications, terms or conditions contained in the IFB.

2. Placing conditions on the furnishing of solicited goods or services.

3. Inclusion of a quotation or order form containing additional specifications, terms or conditions.

4. Referencing external documents containing additional specifications, terms or conditions.

Bidders are advised that bids are evaluated as submitted and requests by bidders to delete conditions contained in their bids after bid opening cannot be considered.

REMITTANCE ADDRESS

In the event that the undersigned is awarded this contract and its remittance address differs from the address shown on the next page, please indicate remittance address below:

_____
Street Address or P. O. Box

_____
City State Zip Code

SIGNATURE PAGE

(See Official Document)

CERTIFICATION FOR TAX CLEARANCE

(See Official Document)

TECHNICAL SPECIFICATIONS

This section indicates the Technical Specifications required for the Tier-2 Disk Storage Infrastructure. The Technical Specifications listed herein are the minimum requirements and are mandatory for an accepted bid.

Furnish, deliver, and install Tier-2 Disk Storage Infrastructure, with the following specifications:

1. Hardware Requirements

Hardware provided by the Contractor shall include the following:

- Rack-mountable in 19" rack (31" between front post and back post). If the array cannot fit, then it must come with a rack.
- Supports both FC and ATA-type disks within the same array.
- Maximum capacity of any combination (i.e., FC and ATA-type) of at least 210 disks (note that this can be restricted by the same type of disks required within an expansion module).
- Disk drives must be of one of the following form factors:
  - 72GB, 15000 RPM FC
  - 250GB, 7200 RPM, ATA-type (SATA or FATA)
- Global hot spare drives or similar technology (i.e. the disks allocated for hot spares can be used for disks in other expansion modules).
- Up to at least 15 disks can be allocated for hot spares.
- All connections between controllers, disk expansion modules, and switches are 2Gb/s FC.
- Maximum physical ports that can be attached to fabric switches, at least 4 at 2Gb/sec each with at least 64 hosts per port support provided.
- Minimum of four 2Gb/sec backend loops.
- Redundant active-active RAID controllers that support the following RAID levels on both FC and ATA-type disks: 0, 1, (0+1 or 1+0), and 5.
- 1GB mirrored cache (i.e., 1GB of cache per controller) with at least 24-hours of power backup that will protect the data that is in cache when the array loses power.
- Internally all parts redundant and hot swappable; including dual redundant power supplies, controllers, fans, etc. (i.e., no hardware single-point of failure and all failed hardware can be replaced without requiring an outage on the array).
- Redundant power feeds (i.e., accepts two sources of power and will automatically failover without interruption in service when the active source of power fails).
- Hot firmware updating (i.e., hardware firmware can be upgraded without requiring an outage on the array).

- Future expansion modules (aka. disk trays) can be added to the array without requiring an outage on the array.
- Cached throughput rates of at least 700MB/s.
- I/O rate of 100,000 IOPs.
- The above hardware requirements are available as of November 1, 2004.

2. Software Requirements

Software provided by the Contractor shall include the following:

- Maximum of at least 45 RAID groups. A RAID group is disks that are grouped together to form a RAID level of 0, 1, (0+1 or 1+0) and 5.
- RAID groups can be created by disks that reside in different expansion modules.
- Minimum RAID-0 group size of 2 or fewer disks. For arrays that can intermix the different RAID levels in a single RAID group, the minimum can be 8 or less disks.
- Maximum RAID-0 group size of at least 16 disks.
- Minimum RAID-01 or RAID-10 group size of 4 disks or fewer. For arrays that can intermix the different RAID levels in a single RAID group, the minimum can be 8 or fewer disks.
- Maximum RAID-01 or RAID-10 group size of at least 16-disks.
- Minimum RAID-5 group size of 3 disks. For arrays that can intermix the different RAID levels in a single RAID group, the minimum can be 8 or fewer disks.
- Maximum RAID-5 group size of at least 16-disks.
- Disks can be added to “live” RAID-0 and RAID-5 groups and can be used to increase the size of existing LUNs or to create additional LUNs.
- Maximum number of LUNs per RAID group is at least 32.
- Maximum number of LUNs per array os at least 512.
- LUNs can be created at variable sizes within a RAID group.
- Hot LUN resizing with no host applications downtime is supported (i.e., an existing LUN can be increased in size without it affecting the LUNs usage at the OS level).
- LUN mapping is supported (i.e., The LUN number can be mapped to a specific target number at the OS level).
- Unlimited LUN Masking – the ability to restrict access of any LUN to one or more WWNs—is supported.
- 2TB of LUN mirroring between any combination of disks (i.e., FC-to-FC, FC-to-ATA, ATA-to-FC, and ATA-to-ATA). LUN mirroring is defined as being able to make a full copy of LUN-A to LUN-B (and in recovery situations, LUN-B back to LUN-A).
- Maximum number of LUN mirrors is at least 24 (i.e., 24 different LUNs can be mirrored).
- LUN mirrors can be controlled (i.e., created, split, resynched, and destroyed) from the host using the LUN.

- 2TB of LUN snapshots between any combination of disks is supported (i.e., FC-to-FC, FC-to-ATA, ATA-to-FC, and ATA-to-ATA). LUN snapshot is defined as a point-in-time copy of a LUN where only the changes made to the LUN are stored.
- Maximum number LUN snapshots is at least 24 (i.e., 24 different LUNs can be snapshot'd).
- Maximum number of snapshots of a LUN is at least 4 (i.e., 4 snapshots of the same LUN).
- LUN snapshots can be controlled (i.e., created and destroyed) from the host using the LUN.
- LUN mirroring is resynchable, or LUN snapshots create writeable snapshots. Resynchable LUN mirroring means that once LUN-A is mirrored to LUN-B, they can be split, and later remirrored, and only the changes that had been made on LUN-A need to be copied to LUN-B to restore the complete mirror. Functionally, the following scenario is required and must be supported:

  ServerA uses LUN-A. LUN-A is initialized as a Veritas Volume Manager disk that belongs to volumegroupA. It is eventually made into the file system /oradata. When it is time to backup the /oradata file system, the I/O activity is stopped on /oradata by shutting down the application that is using it. LUN-A is copied (via resynchable mirror or writeable snapshot) at the array level to LUN-B. If the resynchable mirror was used, the mirror is split after the copy process was complete. At this point in time, the application is restarted (Note: restarting the application should not change LUN-B at this time). LUN-B needs to be backed up on the backup server, serverB. Since LUN-B is a copy of LUN-A, the volume manager information on the LUN indicates that it belongs to volumegroupA which is imported on serverA. Therefore, a forced import is necessary on serverB (this requires LUN-B to be writeable). After LUN-B is imported and a mountpoint mounted, the file system is backed up.
- Synchronous remote replication software - that can mirror LUNs from one array to another array over an IP network - must be available (i.e., this software must be available for this array, but do not bid on it. This may be a future purchase for DR purposes).
- The above software requirements are available as of November 1, 2004.

3. Compatibility Requirements

Compatibility requirements are as follows:

- Microsoft Windows 2000
- RedHat Linux 2.1
- Solaris 8
- HBAs:

  - Qlogic QLA2340 or Emulex LP9802 (Windows 2000)
  - Qlogic QLA2340 or Emulex LP9802 (RedHat Linux 2.1)
  - Qlogic QLA2340 or Emulex LP9802 (Solaris)
  - Qlogic QCP2340 or Emulex LP9002C (Solaris)
- Brocade 3200, OS v3.0.2h, v3.0.2q, or v3.1.1x
- Veritas Volume Manager 3.2 or 3.5 DMP (for Solaris); which provides automatic failover of connections between the host and the storage host interfaces. If not compatible with Volume Manager, alternate software that has the equivalent automatic failover capability must be provided instead. This software is required to work with Volume Manager and needs to be provided for at least twenty hosts.
- The above compatibility requirements are met as of November 1, 2004.

4. Support Requirements

Support Requirements are as follows:

- Automated “phone home” or “email home” (i.e., when there is a hardware problem in the array, the array will automatically phone or e-mail the Contractor to report the problem, so that the Contractor can dispatch an engineer to fix the problem).
- Oahu, Hawaii spare parts depot.
- 5-year hardware and software maintenance contract to be paid annually.
- Toll-free support number providing 24x7 support coverage with FOUR (4) hour response time.
- At least TWO (2) manufacturer-certified engineers on island to provide hardware maintenance. They need to be certified by November 1, 2004.
- Maintenance escalation procedure that includes the manufacturer with both the vendor and UH allowed to determine when and what level of escalation is appropriate.
- TWO (2)-days professional services assistance for hardware/software installation and resource management software training, including initial configuration of LUNs for our environment.
- The above support requirements are available as of November 1, 2004 (unless specified otherwise).

5. Configurations

It is understood that award of contract is contingent upon the amount of funds available by the University. The award of contract, if awarded, will be made to the lowest responsive and responsible bidder for one of the follow configurations:

Configurations

All quantities represent raw capacity not including global hot spares:

1. 2 TB of FC drives
2. 2 TB of FC drives and 2 TB of FATA or SATA drives
3. 2 TB of FC drives and 4 TB of FATA or SATA drives
4. 2 TB of FC drives and 6 TB of FATA or SATA drives
5. 2 TB of FC drives and 8 TB of FATA or SATA drives
6. 2 TB of FC drives and 10 TB of FATA or SATA drives

For example, if it is determined that the University has sufficient funds available for Configuration No. 6, award will be made to the lowest responsive and responsible bidder for Configuration No. 6.

Bidders shall include with their bids Appendix A, Description of Proposed Components. A separate description of proposed components shall be included for each configuration.

All questions pertaining to the Technical Specifications shall be directed to Michael Hodges, Manager of Systems Services, telephone (808) 956-7198.

Bidders are cautioned to review the Technical Specifications carefully and thoroughly. Objections to or requests for clarification of the specifications shall be made in writing in accordance with the General Provisions to the Office of Procurement and Real Property Management prior to the submittal of a bid. The submittal of a bid shall be considered as acceptance of the specifications as published.

SPECIAL PROVISIONS

1. SCOPE

The Furnishing, Delivering, Installing, and Maintaining of the Tier-2 Disk Storage Infrastructure shall be in accordance with the terms and conditions of IFB No. 05-027 and the General Provisions dated March 2003 included by reference. Copies of the General Provisions are available at the Office of Procurement and Real Property Management, University of Hawaii, 1400 Lower Campus Road, Room 15, Honolulu, Hawaii 96822 or the General Provisions may be viewed at: http://www2.state.hi.us/bidfiles/uhgpgs.pdf

2. TECHNICAL REPRESENTATIVE OF THE PROCUREMENT OFFICER (TRPO)

The Technical Representative of the Procurement Officer is Michael Hodges, Manager of Systems Services, telephone (808) 956-7198.

3. SUBMITTAL OF TECHNICAL DATA

With their bids, bidders shall submit, in duplicate, manufacturer's literature or brochures with technical data and illustrations of the tier-2 disk storage infrastructure being offered. The University reserves the right to reject and deny any equipment that it may, in its discretion, deem as not meeting the minimum requirements of the technical specifications, and the findings in this regard shall be accepted by the bidder as final and binding.

4. DELIVERY AND INSTALLATION

Prior to delivery and installation, the Contractor shall contact the Technical Representative to coordinate delivery and installation. The Contractor shall deliver, uncrate, assemble, install, and test the equipment within SEVENTEEN (17) consecutive calendar days from the date designated in the Notice to Proceed. Final acceptance will be predicated upon installation and operation to the University's satisfaction.

Delivery shall be made to:

Information Technology Services
c/o Steven Sakata
University of Hawaii
2565 McCarthy Mall, Keller 103
Honolulu, Hawaii 96822

All equipment and materials incorporated in the work under these specifications shall be new. All work to be executed shall be of the highest quality and performed by skilled mechanics in the best workmanlike manner.

5. MANUALS AND INSTRUCTIONS

The Contractor shall provide the University with operating and maintenance manuals of the tier-2 disk storage infrastructure furnished under this contract.

6. PROFESSIONAL SERVICES/TRAINING SESSIONS

The Contractor shall provide TWO (2) days of professional services assistance for hardware/software installation and resource management software training, including initial configuration of LUNs for the University's environment. The Contractor shall coordinate with the Technical Representative to arrange the date, time, and place for these sessions.

7. MAINTENANCE

Maintenance and spare parts shall be available locally (Oahu, Hawaii). All maintenance services must be prompt and effective and shall be performed by qualified servicemen.

8. WARRANTY

The equipment furnished shall be new and as specified. The Contractor shall warrant that all workmanship and materials of equipment furnished under this contract shall be guaranteed for a period of ONE (1) year from the date of acceptance. The Contractor shall replace and/or repair any defective workmanship and/or materials at no cost to the University during the period of warranty, provided such defects are not due to abuse or negligence on the part of the University.

9. TERM OF CONTRACT (Applicable to the Annual Hardware Maintenance and Software Support)

The initial term of the contract shall be for a period of ONE (1) year commencing on the date of Notice to Proceed. The annual hardware maintenance and software support portion of the contract shall commence upon satisfactory delivery and installation, and acceptance by the University. Thereafter, the annual hardware maintenance and software support portion of the contract shall be renewable from year to year, for a total of FIVE (5) years, without the necessity of rebidding, upon mutual agreement in writing, NINETY (90) days' prior to the annual renewal date. The contract price for each renewal period shall remain the same as quoted herein. Further, the University may terminate the contract at any time upon NINETY (90) days' prior written notice.

10. PAYMENT

The Contractor shall be remunerated annually, upon submission of a properly executed original invoice and ONE (1) copy, indicating the contract number, to University of Hawai‘i, Information Technology Services, 2425 Campus Road, Sinclair Room 10, Honolulu, Hawaii 96822.

11. TAX CLEARANCE FOR CONTRACTS

Bidders shall submit with their bid packages, original or certified tax clearances from the State of Hawaii Department of Taxation and the Internal Revenue Service, in accordance with General Provision 2.23, Tax Clearance for Contracts.

12. TAX CLEARANCE FOR FINAL PAYMENT

Before final payment for the settlement of the contract can be made, Contractor shall submit an original or certified tax clearance from the State of Hawaii Department of Taxation and the Internal Revenue Service, in accordance with General Provision 7.2, Tax Clearance for Final Payment.

APPENDIX A

Configuration 1:

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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APPENDIX A

Configuration 2:

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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APPENDIX A

Configuration 3: _____

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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APPENDIX A

Configuration 4: _____

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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APPENDIX A

Configuration 5: _____

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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APPENDIX A

Configuration 6: _____

Item	*Description Of Proposed Component*	*Annual Costs*				
		Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
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